UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,613	07/03/2003	Eric Feron	101328-0176	4360

			EXAMINER
21125	7590	12/06/2006	COOLMAN, VAUGHN

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ART UNIT	PAPER NUMBER
3618	

DATE MAILED: 12/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/613,613	FERON, ERIC
	Examiner	Art Unit	
	Vaughn T. Coolman	3618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _18 September 2006_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _11-18_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _11-18_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _18 September 2006_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

_V/C 12/04/06_

Attachment(s)

1) ☒	Notice of References Cited (PTO-892)		4) ☐	Interview Summary (PTO-413)
2) ☐	Notice of Draftsperson's Patent Drawing Review (PTO-948)			Paper No(s)/Mail Date. _____ .
3) ☐	Information Disclosure Statement(s) (PTO/SB/08)		5) ☐	Notice of Informal Patent Application
	Paper No(s)/Mail Date _____ .		6) ☐	Other: _____ .

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Invention II and Species I in the replies filed on 11/21/2005 and 03/09/2006, respectively, is acknowledged. The traversal is on the ground(s) that the terms luggage and object can be used interchangeably. This is not found persuasive because there are many wheeled objects that are not luggage such as automobiles, motorcycles, and radio controlled planes. The quality of search is hindered when examiner is burdened with additional inventions and species (wheeled objects and luggage), regardless of whether the search of one invention might overlap the search for a separate invention.

Claim 19 will not be rejoined as requested by applicant because claim 11 is not deemed allowable.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: y_s.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

Claim 11 recites the limitation "the angle θ" in line 15. There is insufficient antecedent

basis for this limitation in the claim.

Claim 13 introduces the angle ζ as an apparent "fudge factor" that has no *defined,*

scientific basis in the specification. No advantage or reasoning for the choosing of the value of

this angle, its trigonometric properties, or the effect of its inclusion on the equations governing

the determination of the coordinate system is given. The various constraints relating to the wheel

axel mentioned in the third paragraph of page 11 are not explained with any detail either.

Examiner respectfully suggests that the inclusion of these factors is simply to fit the equations to

the experimental curves discovered through routine testing of the secondary wheel system when

mounted on the wheeled object.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
patent by another filed in the United States before the invention by the applicant for patent, except that an
international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
subsection of an application filed in the United States only if the international application designated the United
States and was published under Article 21(2) of such treaty in the English language.

Claim 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Stanish.

[claim 11] Stanish discloses a passively stabilized wheeled object (10) comprising an object body (16); at least one primary wheel assembly (30, 39, 39') comprising two wheels (39, 39'), spaced apart from each other and mounted to the object body to rotate about a common axis (shown in FIG 1), the primary wheel assembly obviously capable of being defined by a first set of coordinates [attached to the object body] x, y and z, wherein x is in the direction of [the object body] motion, is [orthogonal to both x and z] vertical and z is the direction along the common axis of the primary wheel assembly and a second set of coordinates x_1, y_1, and z_1 defined relative to the earth, ["aligned with the direction of motion of the luggage and attached to the earth. The x_1 coordinate points along the direction of motion. The y_1 coordinate points upwards, and the z_1 coordinate points across the direction of motion" (page 9, final paragraph of the instant application)] such that when the object is at rest [vertically, as shown in FIGS 1 and 2 of Stanish], the coordinates x, y and z substantially match x_1, y_1 and z_1; and at least one secondary wheel assembly comprising at least two secondary wheels, disposed on opposite sides of, and spaced further apart than the wheels of the primary wheel assembly. Each of the secondary wheels can be defined by a cant axis which is substantially similar to the y axis and an angle Ψ (Ψ of Stanish equals 0 degrees) representing rotation about the cant axis relative to the x axis, the angle Ψ thus defining the orientation of the secondary wheel relative to a primary wheel and being chosen to inherently restore stability if the object tips, wherein the object tips when the [an] angle θ between the z and z_1 axes is greater than zero. Examiner notes that in a broad sense, the angle can be greater than zero by a very small amount, such as one second in the DMS system, or very large and the chosen offset of Stanish will restore stability due to the track difference between the primary and secondary wheel assemblies.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanish.

[claim 12] The cant axis of the invention disclosed by Stanish can obviously be defined, or described by an angle ξ which is the angle between the coordinate axis x_1 [along the object body] and the cant axis [substantially similar to the vertical axis], and expressed in the coordinate system attached to the luggage [wheeled object] as follows:

$x_1 = \cos \xi$

$y_1 = \sin \xi$

$z_1 = 0.$

Examiner notes that the angle ξ would vary depending upon the angle that the wheeled object disclosed by Stanish is disposed at relative to the ground, or the x axis.

[claim 13] Examiner notes that for the cant axis to be substantially similar to the vertical axis, the angle ξ must be chosen in the vicinity of 90- Φ degrees, where Φ is the "usual" pitch angle of the luggage when towed by its user. The angle ξ could also be further defined as follows:

$x_1 = \cos \xi \cos \zeta$

$y_1 = \sin \xi \cos \zeta$

$z_1 = \sin \zeta,$

where ζ is a small angle less than 40 degrees in absolute value. Examiner notes that due to the fact that there is no reasonable explanation in the instant application of the introduction of the trigonometric properties of the angle ζ into the equations of claim 12, defining the angle ξ further by doing so seems to be solely for the purpose of correcting the values for data manipulation and would have been obvious to one of ordinary skill in the art at the time the invention was made. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradfield.

[claim 11] Bradfield discloses a passively stabilized wheeled object (200) comprising an object body (212); at least one primary wheel assembly (218 or 248), the primary wheel assembly obviously capable of being defined by a first set of coordinates [attached to the object body] x_1, y_1, and z_1, wherein x_1 is in the direction of [the object body] motion, y_1 is [orthogonal to both x_1 and z_1] vertical and z_1 is the direction along the common axis (horizontal axle portion) of the primary wheel assembly and a second set of coordinates x, y and z defined relative to the earth, ["aligned with the direction of motion of the luggage and attached to the earth. The x coordinate points along the direction of motion. The y coordinate points upwards, and the z coordinate points across the direction of motion" (page 9, final paragraph of the instant application)] such that when the object is at rest, the coordinates x, y and z substantially match x_1, y_1 and z_1; and at least one secondary wheel assembly comprising at least two secondary

wheels (244 or 246), disposed on opposite sides of, and spaced further apart than the wheels of

the primary wheel assembly.

Bradfield further shows (see FIGS 7 and 8) a secondary wheel assembly (244, 250, 252)

being disposed on opposite sides of, and spaced further apart than wheels of a primary wheel

assembly (218, 242) wherein each of the secondary wheels (244) is further defined by a cant axis

(not shown) which is substantially similar to the y axis [vertical] and an angle Ψ representing

rotation about the cant axis relative to the x axis [longitudinal direction of the object body shown

in FIG 7] (Column 5, lines 16-21), the Ψ angle thus defining the orientation of the secondary

wheel (244) relative to a primary wheel (242) and being chosen to restore stability if the object

tips (Column 2, lines 3-5).

Bradfield does not disclose the primary wheel assembly as including two wheels spaced

apart from each other and mounted to the object body to rotate about a common axis, however,

in an alternative embodiment (shown in FIG 4), Bradfield teaches a wheel assembly (92) having

two wheels spaced apart and mounted to an object body (12 - identical to object body 212

described above) to rotate about a common axis (90). It would have been obvious to one having

ordinary skill in the art at the time the invention was made to modify the wheeled object shown

by Bradfield with the dual wheels as further disclosed, since such a modification would provide

the advantage of decreasing the rolling resistance for the primary wheel(s).

[claim 12] The cant axis of the invention disclosed by Bradfield can obviously be

defined, or described by an angle ξ which is the angle between the coordinate axis x_1 [along the

object body] and the cant axis [substantially similar to the vertical axis], and expressed in the

coordinate system attached to the luggage [wheeled object] as follows:

$$x_1 = \cos \xi$$

$$y_1 = \sin \xi$$

$$z_1 = 0.$$

Examiner notes that the angle ξ would vary depending upon the angle that the wheeled object disclosed by Bradfield is disposed at relative to the ground, or the x axis.

[claim 13] Examiner notes that for the cant axis to be substantially similar to the vertical axis, the angle ξ must be chosen in the vicinity of 90- Φ degrees, where Φ is the "usual" pitch angle of the luggage when towed by its user. The angle ξ could also be further defined as follows:

$$x_1 = \cos \xi \cos \zeta$$

$$y_1 = \sin \xi \cos \zeta$$

$$z_1 = \sin \zeta,$$

where ζ is a small angle less than 40 degrees in absolute value. Examiner notes that due to the fact that there is no reasonable explanation in the instant application of the introduction of the trigonometric properties of the angle ζ into the equations of claim 12, defining the angle ξ further by doing so is arbitrary and would be obvious to one of ordinary skill in the art at the time the invention was made to introduce such a variable in order to make the equations fit an experimental curve or trend recorded during real life testing. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

[claims 14 and 15] Upon inspection of FIG 7, Bradfield further teaches the absolute value of Ψ being about 20-25 degrees. The apparent value of Ψ taught by Bradfield is within the

range of about 5 degrees to about 55 degrees and also within the range of about 10 degrees to

about 40 degrees.

[claims 16 and 17] Bradfield further teaches the secondary wheels (244) rotating about

secondary axes and wherein the secondary axis of each of the secondary wheels is displaced

vertically *and* laterally from the primary axis of the primary wheels (92 replacing 218 or 248).

The combination would disclose the primary wheels (92) rotating about a primary axis and the

secondary wheels (244) rotating about secondary axes, wherein the secondary axis of each of the

secondary wheels is displaced vertically *and /or* laterally from the primary axis of the primary

wheels.

[claim 18] Bradfield further teaches the diameter of each of the secondary wheels (244)

being smaller than the diameter of the primary wheels (92 replacing 218 or 248). Examiner

notes that diameter of wheels 92 would have diameters equal to each other and to the wheel (218

or 242) they are replacing in the assembly. Upon inspection, the diameter of secondary wheels

(244) is smaller than either of the diameters of primary wheels 218 or 248.

Response to Arguments

Applicant's arguments filed 09/14/2006 have been fully considered but they are not

persuasive.

In response to applicant's argument against the 112 rejection of claim 13, examiner notes

that applicant does not provide a detailed explanation of how the angles are calculated or chosen,

or what the significance of the values are. Examiner notes that the cosine of 40 and smaller

angles ranges from .766 through almost 1.0. This seems to be a correction factor used to fit data

to the expected results, as no other detailed explanation is given. The value of 40 degrees and smaller is advantageous for correcting data that is out of the bounds of the original equation due to the cosine value. Until a valid scientific argument is presented for the inclusion of the angle, the rejection will be made.

Examiner notes that due to the applicant's further defining of the term "tip" in claim 11, the secondary reference of Bradfield is unnecessary, as Stanish meets the broad limitations defined by the amendment. The claim limitations do not require an "an angled wheel assembly" as taught by Bradfield, as the cant axis' angle of rotation is not defined as being greater than or not equal to zero.

Applicant's argument against Bradfield's wheel arrangement being chosen to restore stability is flawed. Bradfield teaches the secondary wheel assembly on the outer portions of the wheeled object as providing a greater degree of turn than interior wheels alone. The wheeled object, or skateboard, turns by tipping the object body such that the z and z1 axes are not collinear. In tipping the object body, the object is "unstable", then the secondary wheels touch the running surface and the stability of a supported and balanced object body is restored. Hence, Bradfield indeed chooses the exterior wheels to restore, or provide, stability when the object is tipped, as implied in column 3, lines 3-5.

Applicant's arguments with respect to claims 11-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). The clarification of the applicant's definition of the direction of tipping of the wheeled object necessitated the new grounds of rejection.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shaw (U.S. Patent No. 2,973,209) teaches a passively stabilized wheeled object including limitations of the claimed invention.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vaughn T. Coolman whose telephone number is (571) 272-6014. The examiner can normally be reached on Monday thru Friday, 8am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Ellis can be reached on (571) 272-6914. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.
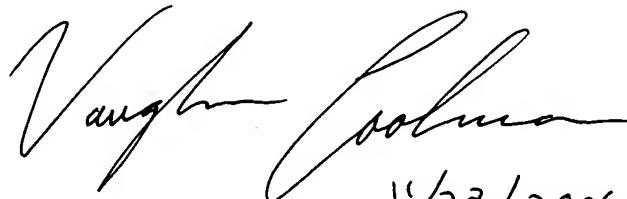
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